

REMARKS

Claims 1 - 9 are pending in the present application. By this Amendment, claims 1, 2, and 4 have been amended. No new matter has been added. It is respectfully submitted that this Amendment is fully responsive to the Office Action dated June 8, 2004.

Allowable Subject Matter:

Applicant gratefully acknowledges the indication in item 16 of the Office Action that claims 5 - 8 would be allowable, if amended, to include all of the limitations of the base claim and any intervening claims.

However, for at least the reasons discussed below, it is respectfully submitted that all of claims 1 - 9 are allowable.

Specification:

The title stands objected to in item 3 of the Action as being non-descriptive. However, the title has been amended such that it is descriptive of the present invention. In addition, in item 5 of the Action, the specification is objected to due to minor informalities. However, the specification has been amended to correct these informalities. Accordingly, withdrawal of these objections is respectfully requested.

Drawings:

In item 7 of the Action, the Examiner asserts that Figs. 7 and 8 should be labeled as "Prior Art". As such, Figs. 7 and 8 have been amended to be labeled as "Prior Art". Accordingly, withdrawal of this objection is respectfully requested.

Claim Objections:

Claims 1, 3 and 4 stand objected to in item 8 – 12 of the Action due to minor informalities. However, each of claims 1, 3 and 4 has been amended to correct such informalities. Accordingly, withdrawal of these objections is respectfully requested.

As To The Merits:

As to the merits of this case, the Examiner maintains the following rejections:

- 1) claims 1-4 stand rejected under 35 U.S.C. §102(b) as being anticipated by Tsang (U.S. Patent No. 5,900,623); and
- 2) claim 9 stands rejected under 35 U.S.C. §103(a) as being unpatentable over Tsang in view of Pritchard (U.S. Patent No. 6,636,261).

Each of these rejections is respectfully traversed.

Independent Claim 1:

According to the invention of the claim 1, the detection capacitor is reset and such reset voltage (including the thermal noise) is output, then the stored charge of the light-sensitive portion is transferred to the detection capacitor being reset after the reset and such detection voltage (including the same thermal noise) is output. The voltage difference between the reset voltage and the detection voltage is output by the correlated double sampling circuit. Therefore, the same thermal noise is removed.

On the other hand, according to Tsang, the operation is as follows. MCAP is reset at the timing A-B (see Fig. 6), then the charge of PD is transferred to MCAP during T-SHUTTER at the timing C-D, then the detected level is output through N4 and N5 at the timing E-G, then MCAP is again reset at the timing H-I, and the reset level is output through N4 and N5. The correlated double sampling circuit 250i output the difference between the detected level and the reset level.

However, the detected level includes a first thermal noise at the first reset of A-B and the reset level includes a second thermal noise at the second reset of H-I. Since the first thermal noise and the second thermal noise are different due to the random noise, therefore, the correlated double sampling circuit, which output the difference between the detected level including the first thermal noise and the reset including the second thermal noise, cannot remove the thermal noise appropriately. On the other hand, in the invention of claim 1, since the detected level includes the first thermal noise generated at the first reset, therefore, the correlated double sampling circuit can remove the first thermal noise.

Independent Claim 4:

With regard to Applicant's argument that Tsang fails to disclose the features of claim 4 concerning *a reset gate, connected to said light-sensitive portion, for depleting said light-sensitive portion by becoming conductive in response to a reset signal*, the Examiner fails to provide any meaningful response.

That is, the Examiner does not contend that Tsang discloses or suggests this feature and instead, merely asserts that Tsang discloses that “[w]hen the reset occurs at rest timing (level VRST), the detection capacitor is discharged and fed to the column output signal (Column 7, lines 27 – 57).”¹

As such, Applicant's respectfully demand that the Examiner properly consider this feature of claim 4 and provide Applicant with the specific portion(s) of the Tsang reference for which the Examiner believes discloses this feature.

In view of the aforementioned amendments and accompanying remarks, the claims, as amended, are in condition for allowance, which action, at an early date, is requested.

If the Examiner believes that this application is not now in condition for allowance, the Examiner is requested to contact the undersigned attorney at the telephone number indicated below to arrange for an interview to expedite the disposition of this case.

¹ Please see, lines 8 – 10, page 2 of the Action.

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In the event that this paper is not timely filed, Applicants respectfully petition for an appropriate extension of time. Please charge any fees for such an extension of time and any other fees that may be due with respect to this paper to Deposit Account No. 50-2866.

Respectfully submitted,

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TEB/jl

Attachment: Replacement Sheet for amended Figs. 7 and 8

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